

Functional Aspects of the Joint

1. Joint Stability

Joint Stability

- ability to resist dislocation
- prevents injuries to surrounding ligaments, muscles and tendons
- high stability desired

Stability vs. Shape of articulating bone surfaces:

- general joint structure:
 - (a) reciprocally shaped
 - (b) tend to fit tightly together
- contact area vs. stability:
 - (a) wide contact area = high stability
ie shoulder vs. hip
 - (b) different among joints and among individuals
 - (c) change in joint angle = change in contact area = change in stability

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Stability vs. Arrangement of the Connective Tissues:

- connective tissues (ligaments, muscles & tendons)
 - (a) affect the relative stability
 - (b) weak & lax connective tissues = low stability
 - strengthening of the tissues = increase in stability
 - muscle activity & fatigue = decrease in stability
- ie. Iliotibial tract or fascia latae
 - (a) crosses lateral aspect of the knee
 - (b) contribute to knee stability

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Joint Flexibility

Joint flexibility:

- range of motion (ROM) allowed at a joint
- ROM: the angle through which a joint moves from anatomical position to the extreme limit of segment motion
- joint specific

Factors affecting flexibility:

- shapes of articulating bone surfaces
- intervening muscle or fatty tissue
- laxity
- extensibility of the collagenous tissues and muscles
- fluid contents in cartilaginous disc
- temperature of collagenous tissues (warm-up)

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Flexibility vs. Injury

- sources of injury
 - (a) extremely low flexibility = high chance of tear or rupture
 - (b) extremely high flexibility = low stability
 - (c) imbalance between dominant and non-dominant sides
- injury prevention: high strength and flexibility desired
- strength;
 - (a) regular stretching = flexibility increases
 - (b) active vs passive stretching
 - (c) ballistic vs. static stretching

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Types of Injuries

1) Acute Injury

- caused by a single event
- rehabilitation is isolated and healing is usually quick
- secondary injuries may occur
ie. ligament or tendon rupture, open fracture

2) Chronic Injury

- also called a repetitive strain injury
- caused by repeated stress on the tissues
- rehabilitation can be complicated and slow
- reinjury is probable
ie. tendonitis, bursitis, stress fracture

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